This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A method for automatically classifying melodic movement properties of audio data, comprising:

applying audio data to a peak detection process;

detecting the location of at least one prominent peak represented by the audio data in the frequency spectrum and determining the energy of the at least one prominent peak;

storing the location of the at least one prominent peak and the energy of the at least one prominent peak into at least one output matrix;

applying the data stored in said at least one output matrix to critical band masking filtering;

applying the data stored in said at least one output matrix to a peak continuation process; ~~and~~

applying the data stored in said at least one output matrix to a melodic movement vector calculation process that determines pitch class movement data corresponding to the audio data for the melodic movement vector; and

further comprising transforming the melodic vector to extract the salient features of the data via principal component analysis.

2. (original) A method according to claim 1, wherein the audio data is divided into frames, and the method is performed frame by frame.

3. (original) A method according to claim 2, wherein the frame by frame approach includes frame differencing.

4. (original) A method according to claim 2, wherein the number of peaks detected in said application of the peak detection process is limited by a pre-defined parameter.

5. (original) A method according to claim 1, further comprising performing Nth order interpolation on at least one of the location of the at least one prominent peak and the energy of the at least one prominent peak to increase precision.

6. (original) A method according to claim 1, further comprising applying the melodic movement vector to a classification stage which determines at least one of (1) at least one melodic movement value and (2) at least one melodic movement class that describes the audio data.

7. (original) A method according to claim 1, wherein the pitch class movement data is stored into a melodic movement vector that is 1 x 24.

8-10. cancelled

11. (original) A method according to claim 1, wherein said critical band masking filtering removes a peak that is masked by surrounding peaks with more energy.

12. (original) A method according to claim 11, wherein said critical band masking filtering removes a peak when a lower frequency peak and a higher frequency peak have greater energy.

13. (original) A method according to claim 11, wherein said critical band masking filters are scalable so that the amount of masking is scalable.

14. (original) A method according to claim 1, wherein said storing includes providing an output of the peak detection and interpolation stage in two matrices, one holding the location of the at least one prominent peak, and the second holding the respective energy of the at least one prominent peak.

15. (original) A method according to claim 1, wherein the audio data is formatted according to pulse code modulated format.

16. (original) A method according to claim 15, wherein the audio data is previously in a format other than pulse code modulated format, and the method further comprises converting the audio data to pulse code modulated format from the other format.

17. (original) The method of claim 1, further comprising converting the input audio data from the time domain to the frequency domain.

18. (original) A method according to claim 17, wherein said converting of the input audio data signal from the time domain to the frequency domain includes performing a fast fourier transform on the audio data.

19. (original) A computer readable medium bearing computer executable instructions for carrying out the method of claim 1.

20. canceled.

21. (original) At least one computing device comprising means for performing the method of claim 1.

22. (original) A method to quantify and classify the melodic movement in a digital audio file, comprising:

detecting and interpolating the maximum peak locations and energies in the spectrum for each frame of a digital audio file;

calculating the melodic vector of the digital audio file;

transforming the melodic vector into the principal component coordinate system, thereby generating the melodic movement principal components; and

classifying the principal components using a classification chain formed from melodic movement classification data classified by humans and melodic movement classification data classified by digital signal processing techniques.

23. (original) The method of claim 22, further including masking critical bands by a scalable amount.

24. (original) The method of claim 22, further including the step of continuing peaks which last for more than a pre-specified number of frames.

25-37. cancelled

38. (new) A method for automatically classifying melodic movement properties of audio data, comprising:

applying audio data to a peak detection process;

detecting the location of at least one prominent peak represented by the audio data in the frequency spectrum and determining the energy of the at least one prominent peak;

storing the location of the at least one prominent peak and the energy of the at least one prominent peak into at least one output matrix;

applying the data stored in said at least one output matrix to critical band masking filtering;

applying the data stored in said at least one output matrix to a peak continuation process; and

applying the data stored in said at least one output matrix to a melodic movement vector calculation process that determines pitch class movement data corresponding to the audio data for the melodic movement vector;

wherein the audio data is divided into frames, and the method is performed frame by frame; and

wherein the frame by frame approach includes frame differencing.

39. (new) A method according to claim 38, wherein the number of peaks detected in said application of the peak detection process is limited by a pre-defined parameter.

40. (new) A method according to claim 38, further comprising performing Nth order interpolation on at least one of the location of the at least one prominent peak and the energy of the at least one prominent peak to increase precision.

41. (new) A method according to claim 38, further comprising applying the melodic movement vector to a classification stage which determines at least one of (38) at least one melodic movement value and (2) at least one melodic movement class that describes the audio data.

42. (new) A method according to claim 38, wherein the pitch class movement data is stored into a melodic movement vector that is 1 x 24.

43. (new) A method according to claim 39, wherein the peak continuation process keeps track of peaks that last more than a predetermined number of frames.

44. (new) A method according to claim 43, wherein the peak continuation process fills in peaks where a peak has been missed in a predetermined number of frames.

45. (new) A method according to claim 38, wherein said critical band masking filtering removes a peak that is masked by surrounding peaks with more energy.

46. (new) A method according to claim 45, wherein said critical band masking filtering removes a peak when a lower frequency peak and a higher frequency peak have greater energy.

47. (new) A method according to claim 45, wherein said critical band masking filters are scalable so that the amount of masking is scalable.

48. (new) A method according to claim 38, wherein said storing includes providing an output of the peak detection and interpolation stage in two matrices, one holding the location of the at least one prominent peak, and the second holding the respective energy of the at least one prominent peak.

49. (new) A method according to claim 38, wherein the audio data is formatted according to pulse code modulated format.

50. (new) A method according to claim 49, wherein the audio data is previously in a format other than pulse code modulated format, and the method further comprises converting the audio data to pulse code modulated format from the other format.

51. (new) The method of claim 38, further comprising converting the input audio data from the time domain to the frequency domain.

52. (new) The method of claim 51, wherein said converting of the input audio data signal from the time domain to the frequency domain includes performing a fast fourier transform on the audio data.

53. (new) A computer readable medium bearing computer executable instructions for carrying out the method of claim 38.

54. (new) At least one computing device comprising means for performing the method of claim 38.